

CERTIFICATE

By Authority Of THE UNITED STATES OF AMERICA Legally Binding Document

By the Authority Vested By Part 5 of the United States Code § 552(a) and Part 1 of the Code of Regulations § 51 the attached document has been duly INCORPORATED BY REFERENCE and shall be considered legally binding upon all citizens and residents of the United States of America. HEED THIS NOTICE: Criminal penalties may apply for noncompliance.



Document Name: AAMA 1704: Voluntary Standard Egress Window Systems for Utilization in Manufactured-Housing

CFR Section(s): 24 CFR 3280.404(b)

Standards Body: American Architectural Manufacturers Association



Official Incorporator:

THE EXECUTIVE DIRECTOR
OFFICE OF THE FEDERAL REGISTER
WASHINGTON, D.C.

Voluntary Standard Egress Window Systems for Utilization in Manufactured Housing

AAMA 1704-85



TABLE OF CONTENTS

1.	GENERAL REQUIREMENTS.....	1
1.1	Introduction	1
1.2	Scope and Purpose	1
1.3	Definitions	1
2.	REQUIREMENTS.....	2
2.1	Installation.....	2
2.2	Performance For Primary Windows Used in Egress system.....	2
2.3	Dimensions	2
2.4	Operational	2
3.	APPURTENANCES.....	3
3.1	Dimensional Requirements	3
3.2	Mechanism Requirements for Non-Operable Appurtenances.....	3
3.3	Non-Removable Appurtenance	4
3.4	Appurtenance Instructions	4
3.5	Integral Rolled-in Screen	4
4.	TEST METHODS.....	4
4.1	Test Method A - Minimum Dimensions.....	4
4.2	Test Method B - Minimum Area	4
4.3	Test Method C – Operating Forces	4
4.4	Test Method D - Mechanical Device Operating Force (Appurtenances).....	5
5.	TEST REPORT.....	5
5.1	Exclusions.....	5
6.	CERTIFICATION	5
7.	EVIDENCE OF COMPLIANCE	5
8.	INSTALLATION INSTRUCTIONS	5
	APPENDIX.....	6
	MANUFACTURED HOME EGRESS WINDOW SYSTEM INSTALLATION INSTRUCTION	8
1.	SPECIAL INSTRUCTIONS AND REQUIREMENTS.....	8
2.	ROUGH OPENING OPERATION	8
3.	WINDOW INSTALLATION	9

AAMA. The Source of Performance Standards, Products Certification and Educational Programs for the Fenestration Industry.

All AAMA documents may be ordered at our web site in the "Publications Store".

©1985 American Architectural Manufacturers Association – These printed or electronic pages may NOT be reproduced, republished or distributed in any format without the express written consent of the American Architectural Manufacturers Association.

This document was developed and maintained by representative members of AAMA as advisory information. AAMA DISCLAIMS ALL WARRANTIES WITH REGARD TO THIS INFORMATION, INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL AAMA BE LIABLE FOR ANY DAMAGES WHATSOEVER FROM THE USE, APPLICATION OR ADAPTATION OF MATERIALS PUBLISHED HEREIN. It is the sole responsibility of the user/purchaser to evaluate the accuracy, completeness or usefulness of any information, opinion, advice or other content published herein.

VOLUNTARY STANDARD
EGRESS WINDOW SYSTEMS
FOR UTILIZATION IN MANUFACTURED HOUSING

1. GENERAL REQUIREMENTS

1.1 Introduction

This standard is for use in establishing performance criteria for egress systems for use in manufactured housing construction. While other egress systems, not incorporating windows may qualify as approved devices, this standard is limited to utilization of egress window systems.

1.2 Scope and Purpose

The purpose of this section is to establish the requirements for the design, construction and installation of windows and approved devices intended to be used as an emergency exit during conditions encountered in a fire or similar disaster. A "primary window" and designated "appurtenances" together with the necessary operating instructions constitute an "Egress Window System."

1.3 Definitions

1.3.1 Approved Appurtenance

An appurtenance in place with the primary component of the egress system at the time of testing for certification.

1.3.2 Approved Devices

Systems consisting of one or more components used to provide a means of emergency egress.

1.3.3 Appurtenance

Any and all components, esthetic or functional, used in conjunction with the primary components of an egress system. The component may or may not be directly attached to the primary component.

1.3.4 Assembly Drawings

Drawings of the egress system that show the relationship of major components of a system in a typical cross section of the housing unit.

1.3.5 Egress System

A combination of components that properly installed in a housing unit, will provide a secondary means of egress from the housing unit when access to exterior passage doors is unavailable by reason of calamity such as fire, wind storm, etc.

1.3.6 Egress Window System

An egress system has a window as its primary component.

1.3.7 Emergency Operating Instructions

An egress system component providing all necessary user information required to operate the system and having been operated, to restore the system for further use.

1.3.8 Independent Quality Assurance Agency

An agency not affiliated with the egress system manufacturer or user, approved to perform tests in accordance with this standard.

1.3.9 In-Plant Inspection

Examination by an independent agency of all components of egress systems to comply with the test criteria of this standard. Available production units will be used for this inspection.

1.3.10 Operational Hardware

Components of an egress system that require manipulation or operation by an occupant to effect egress.

1.3.11 Written Installation Instruction

Documentation provided to a housing manufacturer by the supplier of an egress system. The documentation will specify the method of installation required to assure acceptable function of the supplied egress system. The supplier shall maintain a permanent copy of the installation instructions.

2. REQUIREMENTS

2.1 Installation

Egress window system manufacturers shall provide the housing manufacturers with written installation instructions (See Appendix). Compliance to these instructions is required to comply to these standards.

2.2 Performance For Primary Windows Used in Egress system

Any primary window used as a functional part of an egress system shall meet all the requirements of AAMA 1701.2-1985, "Primary Window & Sliding Glass Door Voluntary Standard for Utilization in Manufactured Housing."

2.3 Dimensions

All egress systems shall have a minimum clear horizontal dimension of 20 in. and a minimum clear vertical dimension of 24 in. when determined in accordance with Test A, 4.1 and shall have a minimum clear opening of 5 ft.² when determined in accordance with Test Method B, 4.2.

2.4 Operational

2.4.1 Emergency Operating Instructions

Emergency operating instructions shall be applied to each egress window system and shall include the legend: "Do Not Remove." The instructions shall stipulate the removal of all temporary shipping materials immediately upon occupancy of the home. The instructions shall include the sequential steps required to affect egress, including operation of any or all appurtenances.

2.4.2 Operational Check

An operational check of each installed egress window or device shall be made at the manufactured housing factory to determine that the window and stone sash or device and all operators function so that it can be readily opened to the minimum required dimensions without the use of any tools or binding of the window or device. Any window or device failing this check shall be removed and a replacement installed that passes the operability check.

2.4.3 Operational Hardware

A primary window when used in an egress system shall have a total of no more than 2 locks or latches that require operation to affect egress. An appurtenance used in an egress system shall have a total of no more than 2 locks or latches that require operation to affect egress, except that in the case of appurtenances that require removal and are retained by pivot or swivel devices, shall have no more than 4 of these swivel or pivot devices requiring operation for removal of such panel or components. Appurtenance that require removal from the opening to accomplish egress shall be individually labeled on the removal panels, "Remove and Set-Aside for Egress." Instructions for removal and set-aside are to be contained on that label.

2.4.4 Use of Rotary Operators

Any window whose egress provisions are dependent on the operation of a rotary operator is unacceptable.

Example: Awning windows utilizing a single vent for egress and requiring a rotary operator for activation is unacceptable. Whereas, an awning window set in a separate frame whose activation requires only a 180° twist of the lock to allow egress is acceptable, even though a rotary operator is present for normal operation.

2.4.5 Opening Force

The single vector force required to complete each egress sequence of the system shall not exceed 20 lbs., when tested in accordance to Test C, 4.3.

2.4.6 Disabling the System

Alterations or removal of a function or component of the egress system will cause the egress system to be in non-compliance with this standard. The egress system operating instruction label must include an appropriate warning regarding such alteration or removal. Such mechanisms or components shall be fastened so they will not be removed easily by the use of normal household tools such as slotted or Phillips head screw drivers, pliers and wrenches.

Acceptable fasteners would include rivets, one-way screws and pop rivets.

2.4.7 Occupant Assistance

After completion of sequence of operations specified in the instructions, an egress window system shall be capable of meeting the egress requirements without further occupant assistance.

2.4.8 Occupant Testing and Demonstration

An egress window system, when subjected to operation, demonstration or testing by an occupant shall be capable of restoration to the "operational" condition without damage to any component of the system or dwelling.

3. APPURTENANCES

3.1 Dimensional Requirements

The addition or inclusion of screens, secondary windows, or other appurtenances shall not change the dimensional requirements set forth for the system in 2.3.

3.2 Mechanism Requirements for Non-Operable Appurtenances

The number of appurtenance mechanisms requiring operation to effect egress shall not exceed 4 and where swivel or pivot type devices are used to regain non-operable, removal panels, these swivel or pivot type devices shall have a normal operating surface of no less than .25 in² and be capable of operating by

application of a force of no more than 5 lbs. when tested in accordance with Test D, 4.4. All other mechanisms shall be tested as required in 2.4.5.

3.3 Non-Removable Appurtenance

If an appurtenance such as a screen or secondary window is incorporated in the egress system in such a manner that it need not be removed or disengaged in any way in order to effect a fully opened exit, the requirements of 3.2 need not be met.

3.4 Appurtenance Instructions

The operating instructions detailed in 2.4.1 shall include instructions on the required removal and replacement of any screen, storm sash or other appurtenance unless this information is attached separately to the appurtenance.

3.5 Integral Rolled-in Screen

Integral rolled-in screens, permanently attached to the window frame and requiring removal for egress shall not be used in an egress window system.

4. TEST METHODS

4.1 Test Method A - Minimum Dimensions

The minimum horizontal and vertical dimensions required by 2.3 shall be tested as follows:

4.1.1 Horizontal

When the window is in the final position for egress, a 20 inch dowel shall be passed through the opening at the point of its least dimension while contacting only one point of the window frame at the horizontal orientation of the dowel.

4.1.2 Vertical

When the window is in the final position for egress, a 24 inch dowel shall be passed through the opening at the point of its least dimension while contacting only one point of the window frame, at the vertical orientation of the dowel.

4.2 Test Method B - Minimum Area

The minimum area requirements of 5 ft² contained in 2.3 shall be determined by multiplying the clear horizontal dimension (which may exceed 20 in.) by the clear vertical dimension. Minimum dimensions are determined as in 4.1.

Example: In egress systems whose minimum dimension is from the main frame bottom (relative to the occupied space) to that portion of the opening furthest from the bottom of the egress opening when in the fully opened position, then the minimum area shall be determined by multiplying the minimum dimension by the inside, side-to-side dimension.

4.3 Test Method C – Operating Forces

4.3.1 Operating Forces

For horizontal or vertical moving windows, a force gage shall be attached to the manual pull bar at its center point. After opening the latches or locks, a force not to exceed 20 lbs. shall be exerted in a direct pull parallel to the window in order to obtain movement in the opening direction. The window shall be in the closed and latched position prior to the test and shall have been subjected to 5 opening and closing cycles prior to the test.

4.3.2 Locks and Latches

Locks and latches shall be tested as noted in 4.3.1 of this section except that the force gage shall be located in the center of the latch or lock handle.

4.4 Test Method D - Mechanical Device Operating Force (Appurtenances)

A force gage of sufficient capacity using a point contact and having the ability to retain the maximum reading (Chatillion DDP - 50 or similar) shall be used. The force gage point shall be applied to the mechanism at the center of the normal force application area and sufficient force applied to disengage the appurtenance from its mounted position or operate to the egress (open) position. Removable panels requiring "set-aside" shall not exceed 20 lbs. maximum weight. The maximum reading obtained during operation shall be retained by the force gage until recorded and reset.

5. TEST REPORT

5.1 Exclusions

A test report shall include all requirements of this standard listed in the order shown in this standard. Where certain provisions of the standard do not apply, the notation "N.A." (Not Applicable) shall so denote these items. Where certain appurtenances are not supplied, such as storm windows or screens, the notation "N.S." (Not Supplied) shall so denote those items.

5.2 Identification of System

The test report shall be for an egress window system which includes the primary window and all such appurtenances supplied as a part of the system by the window manufacturers, such as trim, secondary windows and screens not part of the primary window. The test report shall be accompanied by assembly drawings of the egress system and sufficient parts lists, drawings and extrusion drawings to positively identify the tested egress system. The test report number and the testing agency for the primary window portion of the system shall be included with the egress system test report.

6. CERTIFICATION

The manufacturer shall show evidence of continued compliance by affixing a quality certification label to the primary component of the system in accordance with ANSI Z34.1-1982, "American National Standard Practice for Certification Procedures." In determining certifiability under this standard, compliance shall consist of original qualification specimen testing in accordance with each and every requirement of this standard followed by an in-plant inspection system consisting of a minimum of two such inspections per year by an independent quality assurance agency.

7. EVIDENCE OF COMPLIANCE

Compliance shall be evidenced by the listing of the egress window system by an independent, recognized quality assurance agency and presence of a recognizable label referencing compliance on each egress system.

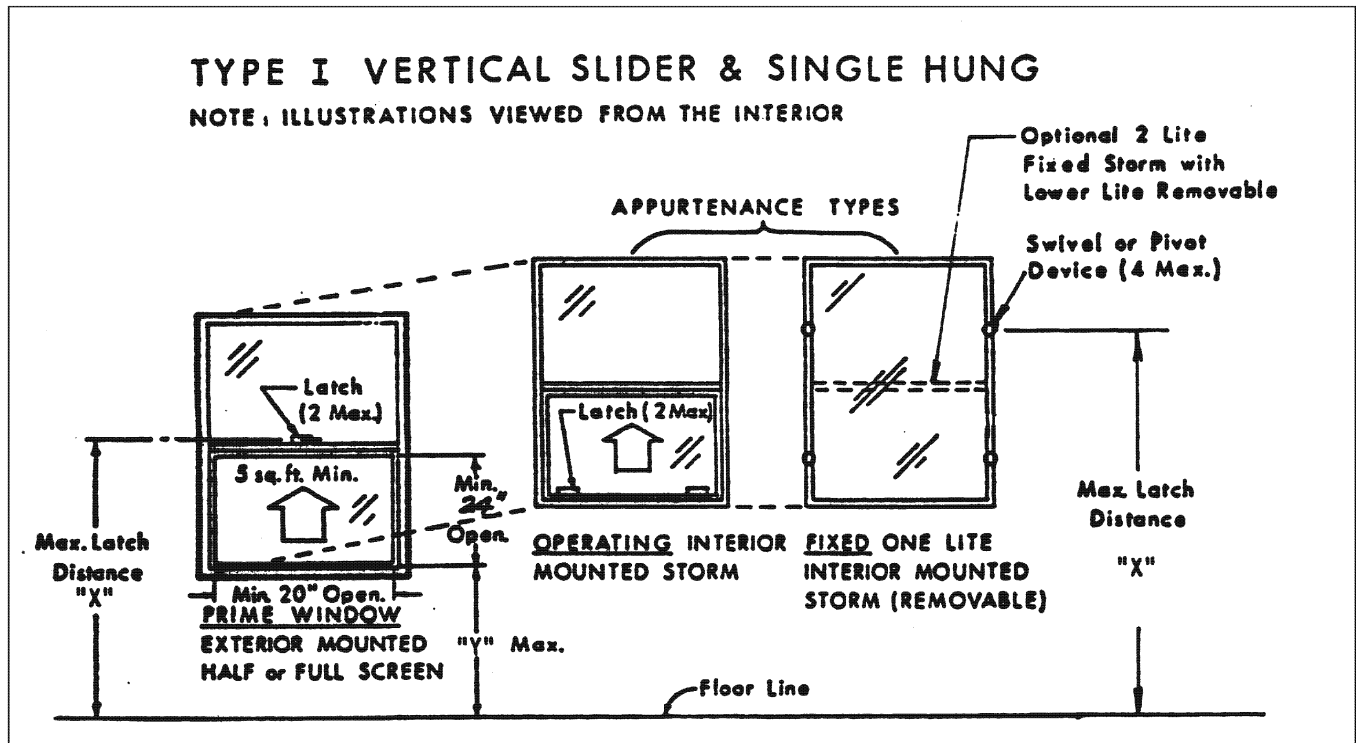
8. INSTALLATION INSTRUCTIONS

The installation instructions in the appendix to this standard are typical of instructions that should be followed for proper installation of egress windows. Egress window manufacturers shall provide the home manufacturer with written installation instructions for the applicable egress window used.

APPENDIX

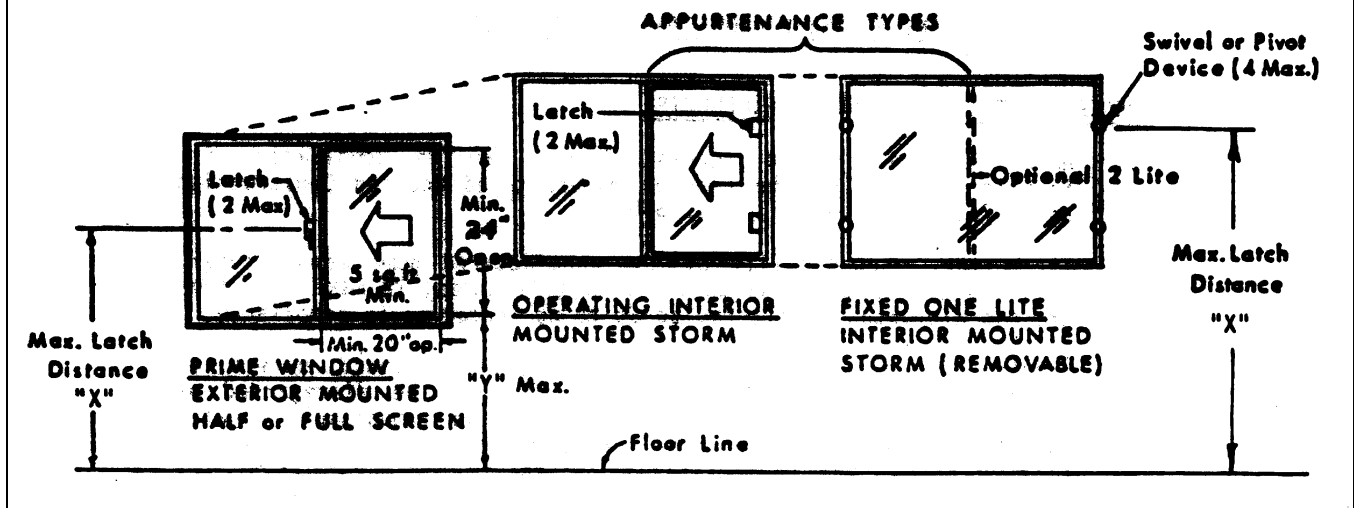
This appendix is not part of this standard. It is included for information purposes only.

TYPICAL EGRESS WINDOW SYSTEMS & TYPES



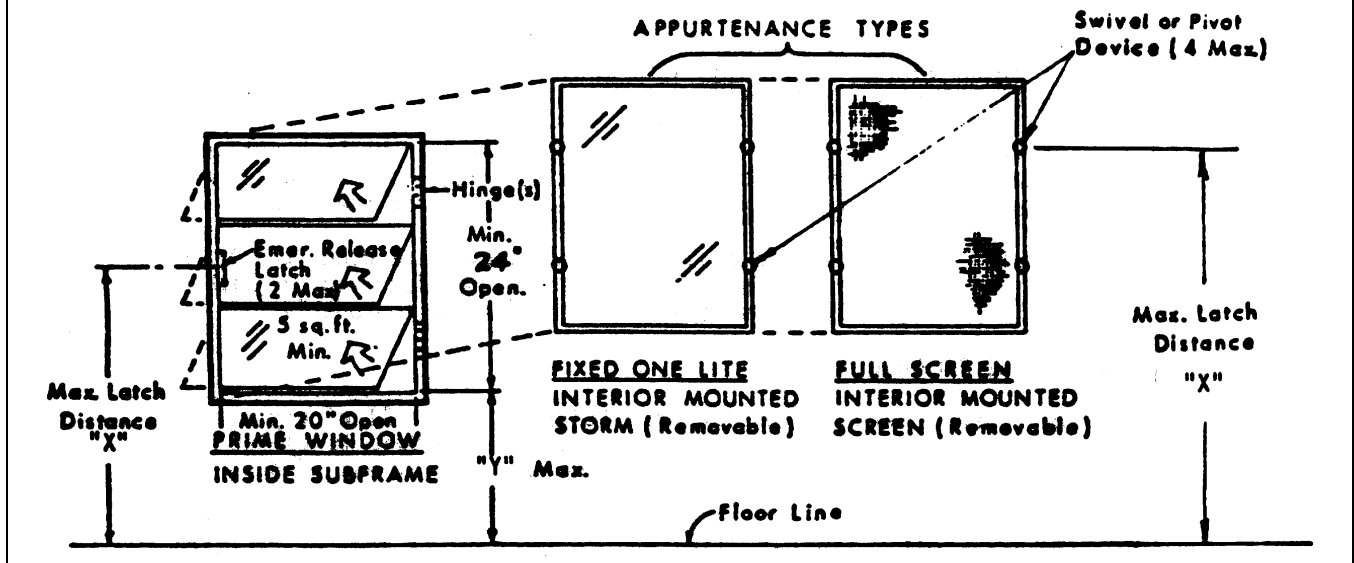
TYPE II HORIZONTAL SLIDER

NOTE: ILLUSTRATIONS VIEWED FROM THE INTERIOR



TYPE III AWNING (HINGED SWING-OUT)

NOTE: ILLUSTRATIONS VIEWED FROM THE INTERIOR



The "X" location, maximum latch height and "Y" dimension, the maximum sill height, are set forth in another section of the construction standard.

MANUFACTURED HOME EGRESS WINDOW SYSTEM INSTALLATION INSTRUCTION

1. SPECIAL INSTRUCTIONS AND REQUIREMENTS

- 1.1 When delivered, these egress windows are in compliance with Section 3280.106 of the Federal Manufactured Housing Construction and Safety Standard 42 U.S.C. 5401.

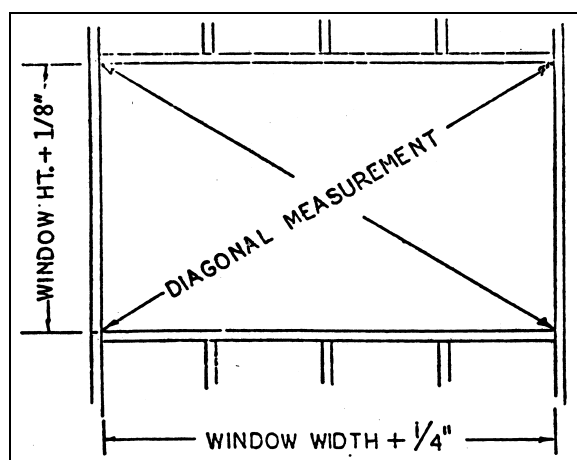
It is the responsibility of the manufactured home manufacturer, when installing these windows and appurtenances, to make sure they are not distorted or altered so as to no longer be in compliance.

- 1.2 Should any mandatory egress instructions included herein or required in Section 3280.404 of the Standard. Be disregarded or violated, the certification of the window is immediately negated and the unit will no longer be considered as being in compliance. In such cases, the responsibility of the window manufacturer for this certification will also cease.
- 1.3 The appurtenances supplied with these egress windows are approved and certified, and shall be installed in accordance with the detailed installation instructions. The use of any appurtenance system not approved for these windows or any alterations to the approved appurtenances negates the certification.
- 1.4 The "Quality Certification" labels shall not be removed by either the Manufactured Home Manufacturer or Dealer. Removal of said labels, negates the certification.
- 1.5 The method of mounting these egress windows should be in accordance with the detailed installation instructions. If an alternate method is used, it must not affect the operation of the window.

Example: If screws are designated and samples are used, the frame members of the window must not be distorted in such a way as to cause the window to operate improperly.

2. ROUGH OPENING OPERATION

- 2.1 The Federal law requires that the height of the sill of any egress window system be limited. This maximum sill height is called out in the body of the Construction Standard. When egress windows are installed with the sill at the maximum height, all components that require operation will also be limited as to height and this dimension will also be called out in the body of the Construction Standard. The maximum sill height has been referred to as the "Y" dimension and the maximum component height dimension has been referred to as the "X" dimension in the illustrations that accompany the installation instructions.
- 2.2 The prepared rough opening should allow 1/8" clearance on each side and head of window frame including thickness of pre-finished paneling, shims, liners, etc., where used.
- 2.3 Avoid the use of badly warped, twisted or knotted framing members.
- 2.4 Sill of the rough opening must be straight and level.
- 2.5 Check for squareness by measuring across the opening from the head to the sill diagonally both ways. There should be no more than 1/8" between the measurements.



3. WINDOW INSTALLATION

- 3.1 Make certain all mounting surfaces (siding seams included) are securely fastened and flat around perimeter of window opening.
- 3.2 For surface mounted windows, apply a suitable non-hardening sealant tape on the backside of the window mounting flanges in order to provide a good seal.
- 3.3 Do not remove any shipping clips and keep operating sash closed and locked during installation.
- 3.4 Always handle windows properly. Always use both hands and pick them up by both side jambs. Never pick up and handle windows by the header only, sill only, or one side jamb only. This can damage the windows and possibly rupture the glazing seal and/or the joint caulking, thus resulting in a possible leak.
- 3.5 Carefully insert window into opening and rest weight of window onto sill. Adjust window location in opening from side to side until equal clearance is given to jambs.
- 3.6 Drive first fastener at approximate center of sill. Drive second fastener at approximate center of head, then drive third and fourth fasteners at approximate centers of each jamb. Drive the other remaining fasteners around perimeter of window. Avoid damage to joint seals and glass to metal caulking. Fasteners shall be driven perpendicular to plane of window.

CAUTION: *Power drivers when used should be adjusted so as not to cause excessive dimpling of the window flanges and consequently a possible distortion of the window frame.*

- 3.7 If the exposed surfaces of the rough inside opening are to be trimmed out with pre-finished paneling, it must be done in a manner so as not to distort or twist the window frame members and make the operating sash tight or inoperable.
- 3.8 Do not obstruct locking mechanisms with inside trim, wood molding, etc.
- 3.9 Install screens, storm windows or other appurtenances as detailed in window manufacturer's installation instructions.
- 3.10 Remove all shipping clips located on the window including all appurtenances. Test operate the egress window system as detailed leaf in the affixed operating instructions. If the egress window system does not operate properly, determine the cause and correct immediately or replace the portion of the system that does not operate properly.
- 3.11 All shipping clips must be removed as soon as practical, and in every case prior to occupancy.
- 3.12 It is important that no obstruction be placed so as to restrict access to the window.

